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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LOKE, STEVEN HO YIN

ART UNIT PAPER NUMBER

2811

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/618,192	Applicant(s) CROWLEY ET AL.	
	Examiner Steven Loke	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-44 and 47-49 is/are pending in the application.
- 4a) Of the above claim(s) 38 and 39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-37, 40-44 and 47-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/24/03, 10/29/03</u> | 6) <input type="checkbox"/> Other: _____ |

1. Applicant's election without traverse of claims 30-37, 40-44 and 47-49 is acknowledged.

2. The disclosure is objected to because of the following informalities:

There is no reference numeral [160a] (page 6, line 7) in the figures.

In page 6, line 17, the phrase ".....in that the are....." is unclear. The word "the" should be deleted.

Appropriate correction is required.

3. Claims 30 and 40 are objected to because of the following informalities: Claim 30, line 10, the phrase "encapsulant material" is unclear whether it is being referred to "an encapsulant material". Claim 40, line 13, the phrase "flush wish....." is unclear whether it is being referred to "flush with.....". Appropriate correction is required.

4. Claims 35, 42 and 47-49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 35, line 2, the phrase "each of the leads includes a recessed portion" is unclear as to how a lead includes a recessed portion. Fig. 3 discloses the recess portion of the die pad [104] is formed adjacent to the leads [106, 114, 116, 118, 120]. The phrase should rewrite as "a recessed portion formed adjacent to each of the leads".

Claim 42, line 2, the phrase "each of the leads has a recessed portion" is unclear as to how a lead has a recessed portion. Fig. 3 discloses the recess portion of the die pad [104] is formed adjacent to the leads [106, 114, 116, 118, 120]. The phrase should rewrite as "a recessed portion formed adjacent to each of the leads".

Claim 47, line 14, the phrase "each of the leads having a recessed portion" is unclear as to how a lead having a recessed portion. Fig. 3 discloses the recess portion of the die pad [104] is formed adjacent to the leads [106, 114, 116, 118, 120]. The phrase should rewrite as "a recessed portion formed adjacent to each of the leads".

Claim 35, line 3, claim 42, line 2, claim 47, line 15, the word "thereof" is unclear whether it is being referred to the die pad or the lead.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 30 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by Lam et al. (U.S. Patent no. 6,256,200 in the IDS filed on 10/24/03).

In regards to claim 30, Lam et al. show all the elements of the claimed invention in figs. 6A-6F. It is a semiconductor package, comprising: a die [110]; a die pad [104] having first and second surfaces, the die being mounted to the first surface of the die pad; a plurality of leads [132A, 132B, 130A-130F], each of the leads having first and second surfaces, at least some of the leads [132A, 132B] being integrally connected to the die pad [104]; a conductive strap [102] electrically connected to and extending between the die [110] and the first surface of at least one of the leads [130A-130F] which is not integrally connected to the die pad [104]; and an encapsulant material [134]

encapsulating the die, at least a portion of the die pad, at least a portion of the conductive strap, and at least a portion of each of the leads such that the second surface (top surface) of each of the leads is exposed in and substantially flush with an exterior surface of the encapsulant material.

7. Claims 30 and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Glenn et al.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

In regards to claim 30, Glenn et al. show all the elements of the claimed invention in figs. 3-4. It is a semiconductor package, comprising: a die [14]; a die pad [20] having first and second surfaces, the die being mounted to the first surface of the die pad; a plurality of leads [1-8], each of the leads having first and second surfaces, at least some of the leads [5-8] being integrally connected to the die pad [20]; a conductive strap [112] electrically connected to and extending between the die [14] and the first surface of at least one of the leads [1-3] which is not integrally connected to the die pad [20]; and an encapsulant material [18] encapsulating the die, at least a portion of the die pad, at least a portion of the conductive strap, and at least a portion of each of the leads such that

the second surface (top surface) of each of the leads is exposed in and substantially flush with an exterior surface of the encapsulant material.

In regards to claim 31, Glenn et al. further disclose a portion of the conductive strap [112] is exposed in the encapsulant material [18].

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 30-37, 40-44, 47 and 48 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8, 12, 14-17, 21 and 22 of U.S. Patent No. 6,630,726 (Crowley et al.). Although the conflicting claims are not identical, they are not patentably distinct from each other because Crowley et al. disclose (in regards to claim 30 of the present application) a semiconductor package, comprising: a die (claim 1, line 2); a die pad having first and second surfaces, the die being mounted to the first surface of the die pad (claim 1, lines 3-4); a plurality of leads, each of the leads having first and second surfaces, at least some of the leads being integrally connected to the die pad (claim 1, lines 5-7); a conductive strap electrically connected to and extending between the die and the first surface of at least one of the

leads which is not integrally connected to the die pad (claim 1, lines 8-11); and an encapsulant material encapsulating the die, at least a portion of the die pad, at least a portion of the conductive strap, and at least a portion of each of the leads such that the second surface of each of the leads is exposed in and substantially flush with an exterior surface of the encapsulant material (claim 1, lines 12-17).

In regards to claim 31, Crowley et al. further disclose a portion of the conductive strap is exposed in the encapsulant material (claim 2).

In regards to claim 32, Crowley et al. further disclose at least a portion of the second surface of the die pad is exposed in the encapsulant material (claim 3).

In regards to claim 33, Crowley et al. further disclose the conductive strap includes a through hole which is filled with the encapsulant material (claim 4).

In regards to claim 34, Crowley et al. further disclose the conductive strap comprises: a first end portion coupled to the die; a second end portion coupled to the first surface of at least one of the leads; and a central portion extending between the first and second end portions, the central portion having a through hole formed therein which is filled with the encapsulant material (claim 5).

In regards to claim 35, Crowley et al. further disclose each of the leads includes a recessed portion which is adjacent to the second surface thereof and is filled with the encapsulant material (claim 6).

In regards to claim 36, Crowley et al. further disclose the die pad has a recessed portion which is adjacent to and extends about the periphery of the second surface

thereof, the recessed portion of the die pad being filled with the encapsulant material (claim 7).

In regards to claim 37, Crowley et al. further disclose the conductive strap includes a flange portion having the lip formed thereon; a conductive layer is disposed between the flange portion and the die and between the lip and the die; and the conductive layer has a first thickness adjacent to the lip and a second thickness adjacent to the flange portion, the first thickness exceeding the second thickness (claim 8).

In regards to claim 40, Crowley et al. disclose a semiconductor package. It comprising: a die (claim 12, line 2); a die pad having first and second surfaces, the die being mounted to the first surface of the die pad (claim 12, lines 3-4); a plurality of leads, each of the leads having first and second surfaces, at least some of the leads being integrally connected to the die pad (claim 12, lines 5-7); a conductive strap electrically connected to and extending between the die and the first surface of at least one of the leads which is not electrically connected to the die pad (claim 12, lines 8-11); and an encapsulant material encapsulating the die, at least a portion of the die pad, at least a portion of the conductive strap, and at least a portion of each of the leads such that a portion of the conductive strap is exposed in and substantially flush with an exterior surface of the encapsulant material, at least a portion of the second surface of the die pad is exposed in and substantially flush with the exterior surface of the encapsulant material, and the second surface of each of the leads is exposed in and substantially flush with the exterior surface of the encapsulant material (claim 12, lines 12-19).

In regards to claim 41, Crowley et al. further disclose the conductive strap comprises: a first end portion coupled to the die; a second end portion coupled to the first surface of at least one of the leads; and a central portion extending between the first and second end portions, the central portion having a through hole formed therein which is filled with the encapsulant material (claim 14).

In regards to claim 42, Crowley et al. further disclose each of the leads has a recessed portion which is adjacent to the second surface thereof and is filled with the encapsulant material (claim 15).

In regards to claim 43, Crowley et al. further disclose the die pad has a recessed portion adjacent to and extending about the periphery of the second surface thereof, the recessed portion being filled with the encapsulant material (claim 16).

In regards to claim 44, Crowley et al. further disclose the conductive strap includes a flange portion having a lip formed thereon; a conductive layer is disposed between the flange portion of the conductive strap and the die and between the lip and the die; and the conductive layer has a first thickness adjacent to the lip and a second thickness adjacent to the flange portion, the first thickness exceeding the second thickness (claim 17).

In regards to claim 47, Crowley et al. disclose a semiconductor package. It comprising: a die (claim 21, line 2); a die pad having first and second surfaces, the die being mounted to the first surface of the die pad (claim 21, lines 3-4); a plurality of leads, each of the leads having first and second surfaces, at least some of the leads being integrally connected to the die pad (claim 21, lines 5-7); a conductive strap

electrically connected to and extending between the die and the first surface of at least one of the leads which is not integrally connected to the die pad (claim 21, lines 8-11); and an encapsulant material encapsulating the die, at least a portion of the die pad, at least a portion of the conductive strap, and at least a portion of each of the leads such that the second surface of each of the leads is exposed in and substantially flush with an exterior surface of the encapsulant material (claim 21, lines 12-17); each of the leads having a recessed portion adjacent to the second surface thereof which is filled with the encapsulant material (claim 21, lines 18-20), and the die pad having a recessed portion adjacent to and extending about the periphery of the second surface thereof, the recessed portion of the die pad being filled with the encapsulant material (claim 21, lines 21-25).

In regards to claim 48, Crowley et al. further disclose the conductive strap comprises a through hole which is filled with the encapsulant (claim 22).

10. Claim 49 would be allowable if rewritten to overcome the rejection(s) of the parent claim under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: The major difference in the claims not found in the prior art of record is at least a portion of the second surface of the die pad is exposed in and substantially flush with the exterior surface of the encapsulant material.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Loke whose telephone number is (571) 272-1657. The examiner can normally be reached on 7:50 am to 5:20 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sl
April 2, 2004

Steven Loke
Primary Examiner

